

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Joseph Pugach	:	Patent Application
		:	
Assignee:	Pressure Chemical Co.	:	Conversion of CO to CO2
		:	
Serial No.	10/806,837	:	
		:	
Filing Date:	03/23/2004	:	
		:	Attorney Docket No. 060051
Confirmation No.	4239	:	

**APPLICANTS'
BRIEF ON APPEAL
37 CFR 41.37**

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Dear Commissioner:

1. REAL PARTY IN INTEREST 37 CFR 41.37(c)(1)(i)

The real party in interest is Pressure Chemical Co.

2. RELATED APPEALS AND INTERFERENCES 37 CFR 41.37(c)(1)(ii)

There are no related appeals.

3. STATUS OF ALL CLAIMS 37 CFR 41.37(c)(1)(iii)

Claim 1: rejected.

Claim 2: rejected.

Claim 3: rejected.

Claim 4: rejected.

Claim 5: rejected.

Claim 6: rejected.
Claim 7: rejected.
Claim 8: rejected.
Claim 9: rejected.
Claim 10: rejected.
Claim 11: rejected.
Claim 12: rejected.
Claim 13: rejected.
Claim 14: rejected.
Claim 15: rejected.
Claim 16: rejected.
Claim 17: rejected.
Claim 18: rejected.
Claim 19: rejected.
Claim 20: rejected.
Claim 21: rejected.
Claim 22: rejected.
Claim 23: rejected.
Claim 24: rejected.
Claim 25: rejected.
Claim 26: rejected.

The claims being appealed are 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, and 26.

4. STATUS OF AMENDMENTS 37 CFR 41.37(c)(1)(iv)

An Amendment in Response to the October 20, 2006 Final Office Action was filed on December 19, 2006 which included correction to claim 21 to correct a typographical error. The Applicants also filed a Response After Final on March 30, 2007 which included an Affidavit from Joseph Pugach showing unexpected results.

5. SUMMARY OF CLAIMED SUBJECT MATTER 37 CFR 41.37(c)(1)(v)

The line numbering refers to the line number of the paragraph number referenced and the paragraph numbers are the numbered paragraphs in US 2004/0175319.

CLAIM 1

Claim 1 is an independent claim. A Method of oxidizing CO in a mixture of gases including oxygen and at least 65% by volume hydrogen. Specification p. 12 ¶ 0047, Ls. 1-3. The mixture of gases is passed through a catalyst bed having an unsupported catalyst. Specification p. 12 ¶ 0047, Ls. 4-6. Made by (a) preparing an aqueous iron/gold solution comprising an iron source and a gold source. Specification p. 12 ¶ 0047, Ls. 6-8. (b) Gradually combining said iron/gold solution with an aqueous solution of an alkali metal base to maintain a pH of 7 to 9 in the

combined solution as the solutions are combined, thereby producing solids in said combined solution. Specification p. 12 ¶ 0047, Ls. 9-12. (c) Separating said solids from said combined solution. Specification p. 12 ¶ 0047, L. 12. (d) Washing said solids. Specification p. 12 ¶ 0047, Ls. 12-13. (e) Drying said solids. Specification p. 12 ¶ 0047, L. 13. (f) Grinding said solids to a size range of 0.85mm to 4.25mm. Specification p. 13 ¶ 0047, Ls. 13-14. (g) Calcining said solids. Specification p. 13 ¶ 0047, L. 15. And (h) activating said catalyst by passing a hydrogen and oxygen containing gas through said catalyst for at least 12 hours at a temperature of 60-90°C. Specification p. 6-7 ¶ 0020, Ls. 1-14.

Claim 12 is an independent claim. A Method of oxidizing CO in a mixture of gases including oxygen and at least 65% hydrogen by volume. Specification p. 12 ¶ 0047, Ls. 1-4. And wherein said CO is present in an amount from 200 ppm to 20,000 ppm by volume, said gas also containing methane. Specification p. 13 ¶ 0047, Ls. 16-19. Comprising passing said mixture of gases through a catalyst bed comprising a particulate unsupported catalyst. Specification p. 12 ¶ 0047, Ls. 4-6. Made by (a) preparing an aqueous iron/gold solution comprising an iron source and a gold source. Specification p. 12 ¶ 0047, Ls. 6-8. (b) Gradually combining said iron/gold solution with an aqueous solution of an alkali metal base to maintain a pH of 7 to 9 in the combined solution as the solutions are combined, thereby producing solids in said combined solution. Specification p. 12 ¶ 0047, Ls. 9-12. (c) Separating said solids from said combined solution. Specification p. 12 ¶ 0047, L. 12. (d) Washing said solids. Specification p. 12 ¶ 0047, Ls. 12-13. (e) Drying said solids. Specification p. 12 ¶ 0047, L. 13. (f) Grinding said solids to a size range of 0.85mm to 4.25mm. Specification p. 13 ¶ 0047, Ls. 13-14. (g) Calcining said solids. Specification p. 13 ¶ 0047, L. 15. And (h) activating said catalyst by passing through

said catalyst a mixture of hydrogen and oxygen in a ratio by volume of about 0.25/65 to 6/65 for at least 12 hours. Specification p. 5 ¶ 0020, Ls. 1-8. Wherein the gold in said catalyst is present in an amount from 0.25% to 10% by weight of the iron in said catalyst. Specification p. 4 ¶ 0015, Ls. 1-2.

Claim 21 is an independent claim. Method of oxidizing CO in a mixture of gases including oxygen and at least 65% by volume hydrogen. Specification p. 12 ¶ 0047, Ls. 1-4. Comprising passing said mixture of gases through a catalyst bed comprising an unsupported catalyst. Specification p. 12 ¶ 0047, Ls. 4-6. Made by (a) preparing an aqueous iron solution from a suitable iron source. Specification p. 12 ¶ 0047, Ls. 6-8. (b) Preparing an aqueous gold solution from a suitable gold source. Specification p. 12 ¶ 0047, Ls. 6-8. (c) Gradually combining said iron solution with an aqueous solution of an alkali metal base to maintain a pH of 7 to 9 in the combined solution as the solutions are combined, thereby producing a slurry of solid in said combined solution. Specification p. 12 ¶ 0047, Ls. 9-12. (d) Gradually combining said gold solution with the slurry while also adding a solution of an alkali metal base to maintain the pH at 7 to 9 in said slurry. Specification p. 12 ¶ 0047, Ls. 9-12. (e) Separating the solids from said slurry. Specification p. 12 ¶ 0047, L. 12. (f) Washing said solids. Specification p. 12 ¶ 0047, Ls. 12-13. (g) Drying said solids. Specification p. 12 ¶ 0047, L. 13. (h) Grinding said solids to a size range of 0.85 mm to 4.25 mm. Specification p. 13 ¶ 0047, Ls. 13-14. (i) Calcining said solids. Specification p. 13 ¶ 0047, L. 15. And (j) activating said catalyst by passing a hydrogen and oxygen containing gas through said catalyst for at least 12 hours at a temperature of 60-90°C. Specification p. 6-7 ¶ 0020, Ls. 1-14.

6. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL 37 CFR 41.37(c)(1)(vi)

CLAIMS 1-26

Claims 1-26 stand rejected under 35 U.S.C. 103(b) as being obvious over
DE 198 36 585 to Plzak (“Plzak”).

7. ARGUMENT 37 CFR 41.37(c)(1)(vii)

- 1 -

**THE EXAMINER HAS NOT
ESTABLISHED A *PRIMA FACIE*
OBVIOUSNESS UNDER 35 U.S.C. 103(b)
FOR THE GROUP OF CLAIMS 1-26**

“In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. Only if that burden is met, does the burden of coming forward with evidence or argument shift to the applicant. A prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art. If the examiner fails to establish a prima facie case, the rejection is improper and will be overturned.” *In re Rijckaert*, 9 F.3d 1531, 1532 (Fed. Cir. 1993) (citations omitted).

In order for the Examiner to establish a prima facie case of obviousness, the Examiner must meet the following criteria:

(A) The prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the

reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure;

(B) There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; and

(C) There must be a reasonable expectation of success.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure MPEP 706.02(j) citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

A. Elements of claims 1, 12 and 21 not shown.

The Examiner in the Office Actions has not shown that the prior art suggests or teaches all of the claim limitations.

Claim 1 – Limitations not Shown in Plzak

- (1) “(f) grinding said solids to a size range of 0.85mm to 4.25mm”; and
- (2) “(h) activating said catalyst by passing a hydrogen and oxygen containing gas through said catalyst for at least 12 hours at a temperature of 60-90°C.”

Claim 12 - Limitations not Shown in Plzak

- (1) “(f) grinding said solids to a size range of 0.85mm to 4.25mm”; and
- (2) “(h) activating said catalyst by passing through said catalyst a mixture of hydrogen and oxygen in a ratio by volume of about 0.25/65 to 6/65 for at least 12 hours,

wherein the gold in said catalyst is present in an amount from 0.25% to 10% by weight of the iron in said catalyst.”

Claim 21 – Limitations not Shown in Plzak

- (1) “(h) grinding said solids to a size range of 0.85 mm to 4.25 mm.”; and
- (2) “(j) activating said catalyst by passing a hydrogen and oxygen containing gas through said catalyst for at least 12 hours at a temperature of 60-90°C.”

The Examiner in discussing the “activation of the catalysts” limitation states, it is expected that the iron gold containing catalyst will also be inherently activated as it oxidizes the carbon monoxide in the oxygen and hydrogen containing gas. Page 3 of October 20, 2006 Office Action. The conclusion by the Examiner that activation is inherent without any support in the reference is not sufficient to establish inherency.

MPEP Section 2112(IV) reads as follows:

The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 9 F.3d 1531, 1534, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993) (reversed rejection because inherency was based on what would result due to optimization of conditions, not what was necessarily present in the prior art); In re Oelrich, 666 F.2d 578, 581-82, 212 USPQ 323, 326 (CCPA 1981). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.' " In re Robertson, 169 F.3d 743, 745, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999) (citations omitted) (The claims were drawn to a disposable diaper having three fastening elements. The reference disclosed two fastening elements that could perform the same function as the three fastening elements in the claims. The court construed the claims to require three separate elements and held that the reference did not disclose a separate third fastening element, either expressly or inherently.). Also, "[a]n invitation to investigate is not an inherent disclosure" where a prior art

reference "discloses no more than a broad genus of potential applications of its discoveries." *Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354, 1367, 71 USPQ2d 1081, 1091 (Fed. Cir. 2004) (explaining that "[a] prior art reference that discloses a genus still does not inherently disclose all species within that broad category" but must be examined to see if a disclosure of the claimed species has been made or whether the prior art reference merely invites further experimentation to find the species).

"In relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." *Ex parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis in original) (Applicant's invention was directed to a biaxially oriented, flexible dilation catheter balloon (a tube which expands upon inflation) used, for example, in clearing the blood vessels of heart patients). The examiner applied a U.S. patent to Schjeldahl which disclosed injection molding a tubular preform and then injecting air into the preform to expand it against a mold (blow molding). The reference did not directly state that the end product balloon was biaxially oriented. It did disclose that the balloon was "formed from a thin flexible inelastic, high tensile strength, biaxially oriented synthetic plastic material." *Id.* at 1462 (emphasis in original). The examiner argued that Schjeldahl's balloon was inherently biaxially oriented. The Board reversed on the basis that the examiner did not provide objective evidence or cogent technical reasoning to support the conclusion of inherency.).

In *In re Rijckaert* case the United States Patent and Trademark Office tried to argue that claim requirements were inherent in the prior art because the claim requirements were optimal conditions. The Federal Circuit reversed because the optimal condition was not described in the prior art.

In this case Plzak does not describe an activation step. The activation step includes passing the catalyst through an oxygen and hydrogen gas combination for at least 12 hours. A person of ordinary skill in the art would not recognize this activation step because they would

expect the reaction to take place in 2 hours without the activation step. The “activation step” is not inherent because it is not disclosed at all by Plzak.

Additionally, the Examiner in discussing the “grinding said solids to a size range of 0.85mm to 4.25mm” limitation has indicated:

The difference between the Applicants’ claims and the Plzak publication is that the Applicants’ claims set forth that the catalyst product was ground to a size ranging from 0.85mm to 4.25, whereas the Table set forth on pg. 5 in the Plzak publication sets forth the catalyst particle sizes that may range from 2.5 nm. to 4.5 nm.

The sentence set forth on pg. 4 lines 35-36 in the Plzak publication sets forth that the catalyst material of the invention may be compressed or molded into pellets.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to grind to a size of ranging from 0.85mm to 4.25mm as set forth in Applicants’ claims.

The Examiner has not shown that Plzak discloses the 0.85mm to 4.25mm size. Pellets have a very broad definition and could be any size including much larger than the claimed range of 0.85mm to 4.25mm.

B. No motivation in Plzak

There is no motivation in Plzak to modify its disclosure so that it uses a particular size of catalyst. Additionally there is not motivation contained in Plzak to modify to include an activation step that takes at least 12 hours.

C. Expectation of Success

Plzak does not show any expectation that using 0.85mm to 4.25mm size catalyst with an activation step will produce a successful result.

The Examiner has not shown a prima facie case of obviousness.

- II -

**Showing of Unexpected Results
As Requested by The Examiner**

Applicant has already shown above that the Examiner has not shown a prima facie case of obviousness and therefore the showing of unexpected results is not necessary. However, if it were, Applicant will describe how it has in fact shown unexpected results.

a. Not all limitations shown and unexpected results not necessary

Applicant can only assume that the Examiner is requiring unexpected results because he believes that this case is a situation where the Applicant is claiming a range within the disclosure of the prior art. The Examiner has indicated that the only difference between the prior art and the claimed invention is the size of the catalyst. This is factually incorrect and has been discussed fully above. The claims also require an activation step which is not shown in the prior art. Therefore, the Examiner is incorrect in its assumption and its conclusion that unexpected results must be shown.

MPEP 2144.04(IV)(A) states as follows:

In *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984), the Federal Circuit held that, where the only difference between the prior art and the claims was a recitation of relative dimensions of the claimed device and a device having the claimed relative dimensions would not perform differently than the prior art device, the claimed device was not patentably distinct from the prior art device.

If a change in dimensions that does not change the performance of the device renders the invention obvious then the contrary proposition should also be true. If a change in dimensions changes the performance of an invention then the invention should be nonobvious. This is the exact scenario for the Applicant's method. Applicant's claims require a different size for the catalyst. The change in size of the catalyst changes the operation of the invention. Because of the size change an activation step is required. Applicant has claimed this activation step. If the Activation step is not used the process does not work. This activation step is not disclosed by Plzak.

b. Unexpected Results

However even assuming that the Examiner is correct and unexpected results are required, Applicant has shown them.

Absence of property which a claimed invention would have been expected to possess based on the teachings of the prior art is evidence of unobviousness. *Ex parte Mead Johnson & Co.* 227 USPQ 78 (Bd. Pat. App. & Inter. 1985) (Based on prior art disclosures, claimed compounds would have been expected to possess beta-andrenergic blocking activity; the fact that claimed compounds did not possess such activity was an unexpected result sufficient to establish unobviousness within the meaning of 35 U.S.C. 103.).

Joe Pugach's Declaration indicates that a person of ordinary skill in the art reading Plzak would expect the oxidation to occur within 2 hours of the catalyst being placed within the reactor. Pugach Declaration Page 2 Paragraph 6. Joe Pugach supports this assertion by using the results table in Plzak as evidence. The Plzak table indicates that the reaction rates occur within 2 hours. Joe Pugach's Declaration indicates that the Applicant's catalyst would not work in 2 hours and only water is produced. Joe Pugach's Declaration Page 2 Paragraph 6. Therefore,

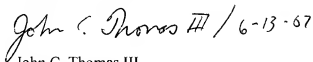
Applicant has an absence of a property which the claimed invention would have been expected to possess, based on the teachings of the prior art. Therefore applicant has unexpected results and is nonobvious over Plzak.

Additionally, Joe Pugach's Declaration indicates that Plzak uses a method as described in Applied Catalysis A: General and is labeled as Comparison Example 1 in Plzak. Comparison Example 1 within Plzak has a conversion rate of 1.14 which is described by Plzak as unsatisfactory. Plzak examples 1 and 2 have conversion rates of 5.7 and 4.6 which are described as satisfactory. Joe Pugach's Declaration indicates that Applicant's claimed method provides for the same conversion rate whether using the method described by Plzak Comparison Example 1 or the other Plzak examples. Applicant's claimed method includes an activated catalyst having a size from 0.85 to 4.25 mm, which produces the same conversion rate for all of the examples. These results are unexpected based on the disclosures of Plzak.

- III -
CONCLUSION

The Examiner's rejections under 35 U.S.C. 102 should be reversed.

Respectfully submitted,

Handwritten signature of John C. Thomas III in cursive, followed by the date 6-13-07.

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A.
CLAIMS APPENDIX
37 CFR 41.37(c)(1)(viii)
APPEALED

1. Method of oxidizing CO in a mixture of gases including oxygen and at least 65% by volume hydrogen comprising passing said mixture of gases through a catalyst bed comprising an unsupported catalyst made by:
 - a) preparing an aqueous iron/gold solution comprising an iron source and a gold source
 - b) gradually combining said iron/gold solution with an aqueous solution of an alkali metal base to maintain a pH of 7 to 9 in the combined solution as the solutions are combined, thereby producing solids in said combined solution
 - c) separating said solids from said combined solution
 - d) washing said solids,
 - e) drying said solids,
 - f) grinding said solids to a size range of 0.85mm to 4.25mm,
 - g) calcining said solids, and
 - h) activating said catalyst by passing a hydrogen and oxygen containing gas through said catalyst for at least 12 hours at a temperature of 60-90°C.
2. Method of claim 1 wherein said gold source comprises $\text{HAuCl}_4 \cdot 3\text{H}_2\text{O}$.
3. Method of claim 1 wherein said iron source comprises $\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$.

4. Method of claim 1 wherein step (b) is conducted at a temperature of 50°C to 90°C.
5. Method of claim 1 wherein said pH is maintained at 7.5-8.5.
6. Method of claim 1 wherein the hydrogen and oxygen containing gas in step (h) is passed through said catalyst for a period of 12-36 hours at a temperature of 65-75°C.
7. Method of claim 1 wherein said gold is present in said catalyst as 0.25% to 10% by weight of said iron oxide.
8. Method of claim 7 wherein said gold is present in said catalyst as 1 % to 3% by weight of said iron oxide.
9. Method of claim 1 wherein said alkali metal base is sodium carbonate.
10. Method of claim 1 wherein said mixture of gases comprises 200ppm to 20,000 ppm by volume carbon monoxide and at least 10% by volume carbon dioxide.
11. Method of claim 1 wherein said catalyst has a size range of 1mm to 1.4mm.
12. Method of oxidizing CO in a mixture of gases including oxygen and at least 65% hydrogen by volume and wherein said CO is present in an amount from 200ppm to

20,000ppm by volume, said gas also containing methane, comprising passing said mixture of gases through a catalyst bed comprising a particulate unsupported catalyst made by:

- a) preparing an aqueous iron/gold solution comprising an iron source and a gold source;
- b) gradually combining said iron/gold solution with an aqueous solution of an alkali metal base to maintain a pH of 7 to 9 in the combined solution as the solutions are combined, thereby producing solids in said combined solution;
- c) separating said solids from said combined solution;
- d) washing said solids;
- e) drying said solids;
- f) grinding said solids to a size range of 0.85mm to 4.25mm;
- g) calcining said solids; and
- h) activating said catalyst by passing through said catalyst a mixture of hydrogen and oxygen in a ratio by volume of about 0.25/65 to 6/65 for at least 12 hours, wherein the gold in said catalyst is present in an amount from 0.25% to 10% by weight of the iron in said catalyst.

- 13. Method of claim 12 wherein said gold is present as 1-3% of the weight of said iron.
- 14. Method of claim 12 wherein said mixture of hydrogen and oxygen used in step (h) is passed through said catalyst at 60-90°C for 12 to 48 hours.

15. Method of claim 14 wherein said mixture of hydrogen and oxygen used in step (h) is passed through said catalyst for 24 to 36 hours.
16. Method of claim 14 wherein said mixture of hydrogen and oxygen used in step (h) comprises hydrogen and 1-5% oxygen by volume based on the hydrogen.
17. Method of claim 1 wherein said hydrogen and oxygen containing gas used in step (h) includes air as a source of oxygen, at least 65% by volume hydrogen, and 0.25-6% by volume oxygen based on said hydrogen.
18. Method of claim 1 wherein said hydrogen and oxygen containing gas is passed through said catalyst for 24 to 36 hours.
19. Method of claim 17 wherein said oxygen is present in said gas at 1-5% by volume.
20. Method of claim 1 wherein said calcining is performed by heating said ground solids gradually to reach a temperature of 200-500°C within an hour, and maintaining the temperature within that range for at least one-half hour.
21. Method of oxidizing CO in a mixture of gases including oxygen and at least 65% by volume hydrogen comprising passing said mixture of gases through a catalyst bed comprising an unsupported catalyst made by:

- a) prepanng an aqueous iron solution from a suitable iron source;
 - b) preparing an aqueous gold solution from a suitable gold source;
 - c) gradually combining said iron solution with an aqueous solution of an alkali metal base to maintain a pH of 7 to 9 in the combined solution as the solutions are combined, thereby producing a slurry of solid in said combined solution;
 - d) gradually combining said gold solution with the slurry while also adding a solution of an alkali metal base to maintain the pH at 7 to 9 in said slurry;
 - e) separating the solids from said slurry;
 - f) washing said solids;
 - g) drying said solids;
 - h) grinding said solids to a size range of 0.85 mm to 4.25 mm;
 - i) calcining said solids; and
 - j) activating said catalyst by passing a hydrogen and oxygen containing gas through said catalyst for at least 12 hours at a temperature of 60-90°C.
22. Method of claim 21 wherein said gold source comprises $\text{HAuCl}_4 \cdot 3\text{H}_2\text{O}$.
23. Method of claim 21 wherein said iron source comprises $\text{Fe}(\text{NO}_3)_3 \cdot 9\text{H}_2\text{O}$.
24. Method of claim 21 wherein said gold is present in said catalyst as 0.25% to 10% by weight of said iron oxide.

25. Method of claim 21 wherein said hydrogen and oxygen containing gas used in step (h) includes air as a source of oxygen, at least 65% by volume hydrogen, and 0.25-6% by volume oxygen based on said hydrogen.
26. Method of claim 21 wherein said mixture of hydrogen and oxygen used in step (h) is passed through said catalyst at 60-90°C for 12 to 48 hours.

B.
EVIDENCE APPENDIX
37 CFR 41.37(c)(1)(ix)

This Appendix contains copies of Joe Pugach's Declaration which was entered in the April 6, 2007 Office Advisory Action.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Joseph Pugach	:	Patent Application
		:	
Assignee:	Pressure Chemical Company	:	Conversion of CO to CO ₂
		:	
Serial No.	10/806,837	:	
		:	
Filing Date:	03/23/2004	:	
		:	Attorney Docket No. 060051
Confirmation No.	4239	:	

**DECLARATION
OF
Joseph Pugach 37 CFR 1.132**

March 16, 2007

I, Joseph Pugach, the inventor of the above identified application declare as follows:

1. **EDUCATION**

- (a) BS in chemistry, MIT, 1958.
- (b) PhD in chemistry, Columbia University, 1963

2. **EXPERIENCE**

- (a) Worked at Halcon International doing product and catalyst research and development for 22 years.
- (b) Worked at Aristech Chemical as manager of research for product development for 13 years.
- (c) Worked at Pressure Chemical as Staff Scientist for 5 years.
- (d) Have consulted for Metabolix, a biotech firm, for 7 years.

3. **I HAVE REVIEWED:**

- (a) Patent Application No 10/806,837;
- (b) DE 198 36 585 to Plzak ("PLZAK");

4. **THE LEVEL OF SKILL OF ONE SKILLED IN THIS ART**

In my opinion, a person of ordinary skill in this art would be a person with a Chemistry degree having ten (10) years work experience.

5. **FACTUAL STATEMENTS SHOWING NONOBVIOUSNESS**

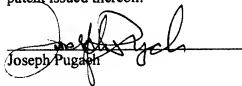
- (a) PLZAK does not require an activation step as required by the claims of Patent Application No. 10/806,837.
- (b) The claims of Patent Application No. 10/806,837 require the solid catalyst to have a size of 0.85mm to 4.25mm.
- (c) A person of ordinary skill in the art would expect that if a person were to use applicant's size catalyst it would work within 2 hours of being placed in the reactor without an activation step. The table on page 15 of the PLZAK translation shows item (a) which indicates that results in PLZAK are obtained after 2 hours. Applicant's invention would only produce water if it were in the reactor for only 2 hours without the activation step. The Applicant's catalyst must be activated for at least 12 and this limitation is required by the claims.
- (d) PLZAK shows results in the Table on page 15 in the form of rates. The catalyst as taught by PLZAK has a rate 4 times faster than that prepared from the literature of Applied catalysis A: General 134 (1996). See comparison example 1 vs. example 1 and example 2 in the table on page 15 of the PLZAK translation. Also PLZAK on page 13 indicated that the results using the

method in literature are better than the literature results but still unsatisfactory because they are far less than the other PLZAK results. Using the activation step and the catalyst size required by the claims in Application No. 10/806,837 the rates were about the same for literature method as well as the method taught by PLZAK.

- (e) Page 9 of the specification of Application No. 10/806,837 shows that by using our claimed method the CO conversion for both methods was at least 90% indicating that it works equally as well under literature method described in Applied catalysis A: General 134 (1996).

DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.


Joseph Pugaeh

Date: 3/21/07

C.

**APPENDIX OF
RELATED PROCEEDINGS
37 CFR 41.37(e)(1)(x)**

This Appendix is NOT APPLICABLE.

No related proceedings have occurred.